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STATE FIRE MARSHAL OPINION
08-01

Subject of Opinion: NFPA 25 (2002 edition) Chapter 13
Obstruction Investigations

Background: The Nevada State Fire Marshal Division, along with other Nevada Fire Service agencies, has recently received questions and concerns from commercial business property owners/managers regarding the nuances of this fire protection system standard. Concerns have been voiced that suddenly fire protection system servicing companies have been suggesting, and in some cases mandating, that their clients submit to costly “tear downs” or “dismantling” of portions of building sprinkler systems to immediately become compliant with NFPA 25 (2002 edition) Chapter 13.

In researching this matter, it was determined that the Nevada State Fire Marshal adopted, by reference, NFPA 25 in September 2004 when the current Fire Code (International Fire Code 2003) was adopted and placed into regulations. Therefore, the initial *inspection* to implement a five year obstruction *investigation* cycle does not need to begin until September, 2009.

It appears that there may be confusion or misinterpretation regarding the intent of Chapter 13 and the word *investigation* as it is used in that chapter.

Opinion: It is the opinion of the Nevada State Fire Marshal that the word *investigation* as used in section 13.2.1 should more appropriately be considered as *inspection*.

It is also believed that the intent of section 13.2.1 is meant to be a minor internal pipe *inspection* to be conducted every five years, whereas in section 13.2.2 a thorough *investigation* is only done when needed.

The intent of section 13.2.1 is that every five years an *inspection* be conducted consisting of opening a flushing connection at the end of one main line and by removing one (1) fire sprinkler head toward the end of one branch line for the purpose of *inspecting* for the presence of foreign organic and inorganic material which may lead to obstructions. If there is no evidence of obstruction, then an *investigation* is not required, and this minimal *inspection* does not have to be done for another five years. It is recommended that this obstruction *inspection*, or *investigation* (if warranted) be conducted in conjunction with the inspection, testing and maintenance of other internal system components which also have a five year frequency requirement.

Section 13.2.1.2 mandates that if during the *inspection* tubercules or slime is found it shall be tested for indications of microbiologically influenced corrosion (MIC).

If during the *inspection* evidence of obstruction is found or if any of the conditions listed in section 13.2.2 exist then the obstruction *investigation* is warranted. The obstruction *investigation*, depending upon what is discovered, may require flushing for a small part of the system, or for the entire system. Repairs to and/or replacement of parts of the system depends on what the obstruction *investigation* reveals.

In summary, the basic intent of this code is: See if it has evidence of foreign material which could lead to obstruction. If it does have foreign material, determine how much and what needs to be done to correct it. If it does not have evidence of foreign material or slime (MIC) then leave it alone.

It should be noted that the 2008 edition of NFPA 25 is now out and this edition makes clear the difference between *inspections* and *investigations* in Chapter 14 Obstruction Investigations.

Maintenance

<i>Control Valves</i>	Annually	13.3.4
<i>Precision/Deluge Valves</i>	Annually	13.4.3.3.2
<i>Dry Pipe Valves/ Quick-Opening Devices</i>	Annually	13.4.4.3.2

13.2 General Provisions.

13.2.1 The property owner shall have manufacturers' literature available to provide specific instructions for inspecting, testing, and maintaining the valves and associated equipment.

13.2.2 All pertinent personnel, departments, authorities having jurisdiction, or agencies shall be notified that testing or maintenance of the valve and associated alarms is to be conducted.

13.2.3* All system valves shall be protected from physical damage and shall be accessible.

13.2.4 Before opening a test or drain valve, it shall be verified that adequate provisions have been made for drainage.

13.2.5* Main Drain Test. A main drain test shall be conducted annually at each water-based fire protection system riser to determine whether there has been a change in the condition of the water supply piping and control valves. (See also 13.3.3.4.)

13.2.5.1 Systems where the sole water supply is through a backflow preventer and/or pressure reducing valves, the main drain test of at least one system downstream of the device shall be conducted on a quarterly basis.

13.2.5.2 When there is a 10 percent reduction in full flow pressure when compared to the original acceptance test or previously performed tests, the cause of the reduction shall be identified and corrected if necessary.

13.2.6 Alarm Devices.

13.2.6.1 Mechanical waterflow devices, including but not limited to water motor gongs, shall be tested quarterly.

13.2.6.2 Vane-type and pressure switch-type waterflow devices shall be tested semiannually.

13.2.7 Gauges.

13.2.7.1 Gauges shall be inspected monthly to verify that they are in good condition and that normal pressure is being maintained.

13.2.7.1.1 Where other sections of this standard have different frequency requirements for specific gauges, those requirements shall be used.

13.2.7.2 Gauges shall be replaced every 5 years or tested every 5 years by comparison with a calibrated gauge.

13.2.7.3 Gauges not accurate to within 3 percent of the full scale shall be recalibrated or replaced.

13.2.8 Records. Records shall be maintained in accordance with Section 4.4.

13.3 Control Valves in Water-Based Fire Protection Systems.

13.3.1* Each control valve shall be identified and have a sign indicating the system or portion of the system it controls.

13.3.1.1 Systems that have more than one control valve that must be closed to work on a system shall have a sign on each affected valve referring to the existence and location of other valves.

13.3.1.2* When a normally open valve is closed, the procedures established in Chapter 15 shall be

followed.

13.3.1.2.1 When the valve is returned to service, a drain test (either main or sectional drain, as appropriate) shall be conducted to determine that the valve is open.

13.3.1.3 Each normally open valve shall be secured by means of a seal or a lock or shall be electrically supervised in accordance with the applicable NFPA standards.

13.3.1.4 Normally closed valves shall be secured by means of a seal or shall be electrically supervised in accordance with the applicable NFPA standard.

13.3.1.4.1 Sealing or electrical supervision shall not be required for hose valves.

13.3.2 Inspection.

13.3.2.1 All valves shall be inspected weekly.

13.3.2.1.1 Valves secured with locks or supervised in accordance with applicable NFPA standards shall be permitted to be inspected monthly.

13.3.2.1.2 After any alterations or repairs, an inspection shall be made by the property owner to ensure that the system is in service and all valves are in the normal position and properly sealed, locked, or electrically supervised.

13.3.2.2* The valve inspection shall verify that the valves are in the following condition:

- (1) In the normal open or closed position
- (2)* Properly sealed, locked, or supervised
- (3) Accessible
- (4) Provided with appropriate wrenches
- (5) Free from external leaks
- (6) Provided with appropriate identification

13.3.3 Testing.

13.3.3.1 Each control valve shall be operated annually through its full range and returned to its normal position.

13.3.3.2* Post indicator valves shall be opened until spring or torsion is felt in the rod, indicating that the rod has not become detached from the valve.

13.3.3.2.1 This test shall be conducted every time the valve is closed.

13.3.3.3 Post indicator and outside screw and yoke valves shall be backed a one-quarter turn from the fully open position to prevent jamming.

13.3.3.4 A main drain test shall be conducted any time the control valve is closed and reopened at system riser.

13.3.3.5* Supervisory Switches.

13.3.3.5.1 Valve supervisory switches shall be tested semiannually.

13.3.3.5.2 A distinctive signal shall indicate movement from the valve's normal position during either the first two revolutions of a hand wheel or when the stem of the valve has moved one-fifth of the distance from its normal position.

13.3.3.5.3 The signal shall not be restored at any valve position except the normal position.

13.3.4 Maintenance.

13.3.4.1 The operating stems of outside screw and yoke valves shall be lubricated annually.

13.3.4.2 The valve then shall be completely closed and reopened to test its operation and distribute the lubricant.

13.4 System Valves.

13.4.1 Inspection of Alarm Valves. Alarm valves shall be inspected as described in 13.4.1.1 and 13.4.1.2.

13.4.1.1* Alarm valves and system riser check valves shall be externally inspected monthly and shall verify the following:

- (1) The gauges indicate normal supply water pressure is being maintained.
- (2) The valve is free of physical damage.
- (3) All valves are in the appropriate open or closed position.
- (4) The retarding chamber or alarm drains are not leaking.

13.4.1.2* Alarm valves and their associated strainers, filters, and restriction orifices shall be inspected internally every 5 years unless tests indicate a greater frequency is necessary.

13.4.1.3 Maintenance.

13.4.1.3.1 Internal components shall be cleaned/repared as necessary in accordance with the manufacturer's instructions.

13.4.1.3.2 The system shall be returned to service in accordance with the manufacturer's instructions.

13.4.2 Check Valves.

13.4.2.1 Inspection. Valves shall be inspected internally every 5 years to verify that all components operate correctly, move freely, and are in good condition.

13.4.2.2 Maintenance. Internal components shall be cleaned, repaired, or replaced as necessary in accordance with the manufacturer's instructions.

13.4.3 Preaction Valves and Deluge Valves.**13.4.3.1 Inspection.**

13.4.3.1.1 Valve enclosure heating equipment for preaction and deluge valves subject to freezing shall be inspected daily during cold weather for its ability to maintain a minimum temperature of at least 40°F (4.4°C).

13.4.3.1.1.1 Valve enclosures equipped with low temperature alarms shall be inspected weekly.

13.4.3.1.2 Low temperature alarms, if installed in valve enclosures, shall be inspected annually at the beginning of the heating season.

13.4.3.1.3 Gauges shall be inspected weekly.

13.4.3.1.3.1 The gauge on the supply side of the preaction or deluge valve shall indicate that the normal supply water pressure is being maintained.

13.4.3.1.4 The gauge monitoring the preaction system supervisory air pressure, if provided, shall be inspected monthly to verify that it indicates that normal pressure is being maintained.

13.4.3.1.5 The gauge monitoring the detection system pressure, if provided, shall be tested monthly to verify that it indicates that normal pressure is being maintained.

13.4.3.1.6 The preaction or deluge valve shall be externally inspected monthly to verify the following:

- (1) The valve is free from physical damage.
- (2) All trim valves are in the appropriate open or closed position.
- (3) The valve seat is not leaking.
- (4) Electrical components are in service.

13.4.3.1.7 The interior of the preaction or deluge valve and the condition of detection devices shall be inspected annually when the trip test is conducted.

13.4.3.1.7.1 Internal inspection of valves that can be reset without removal of a faceplate shall be permitted to be conducted every 5 years.

13.4.3.1.8 Strainers, filters, restricted orifices, and diaphragm chambers shall be inspected internally every 5 years unless tests indicate a greater frequency is necessary.

13.4.3.2 Testing.

13.4.3.2.1* The priming water level in supervised preaction systems shall be tested quarterly for compliance with the manufacturer's instructions.

13.4.3.2.2* Each deluge valve shall be trip tested annually at full flow in warm weather and in accordance with the manufacturer's instructions. Protection shall be provided for any devices or equipment subject to damage by system discharge during tests.

13.4.3.2.2.1* Where the nature of the protected property is such that water cannot be discharged for test purposes, the trip test shall be conducted in a manner that does not necessitate discharge in the protected area.

13.4.3.2.2.2 Where the nature of the protected property is such that water cannot be discharged unless protected equipment is shut down (e.g., energized electrical equipment), a full flow system test shall be conducted at the next scheduled shutdown. In all cases, the test frequency shall not exceed 3 years.

13.4.3.2.2.3 The water discharge patterns from all of the open spray nozzles or sprinklers shall be observed to ensure that patterns are not impeded by plugged nozzles, that nozzles are correctly positioned, and that obstructions do not prevent discharge patterns from wetting surfaces to be protected.

(A) Where the nature of the protected property is such that water cannot be discharged, the nozzles or open sprinklers shall be inspected for proper orientation and the system tested with air to ensure that the nozzles are not obstructed.

(B) Where obstructions occur, the piping and sprinklers or nozzles shall be cleaned and the system retested.

13.4.3.2.3 Except for preaction systems covered by 13.4.3.2.5, every 3 years the preaction valve shall be trip tested with the control valve fully open.

13.4.3.2.4 During those years when full flow testing in accordance with 13.4.3.2.3 is required, the preaction valve shall be trip tested with the control valve partially open.

13.4.3.2.5 Praction or deluge valves protecting freezers shall be trip tested in a manner that does not introduce moisture into the piping in the freezer.

13.4.3.2.6 Pressure Readings.

13.4.3.2.6.1 Pressure readings shall be recorded at the hydraulically most remote nozzle or sprinkler.

13.4.3.2.6.2 A second pressure reading shall be recorded at the deluge valve.

13.4.3.2.6.3 These readings shall be compared to the hydraulic design pressures to ensure the original system design requirements are met by the water supply.

13.4.3.2.6.4 Where the hydraulically most remote nozzle or sprinkler is inaccessible, nozzles or sprinklers in other than foam-water systems shall be permitted to be checked visually without taking a pressure reading on the most remote nozzle or sprinkler.

13.4.3.2.6.5 Where the reading taken at the riser indicates that the water supply has deteriorated, a gauge shall be placed on the hydraulically most remote nozzle or sprinkler and the results compared with the required design pressure.

13.4.3.2.7 Multiple Systems. The maximum number of systems expected to operate in case of fire shall be tested simultaneously to check the adequacy of the water supply.

13.4.3.2.8 Manual Operation. Manual actuation devices shall be operated annually.

13.4.3.2.9 Return to Service. After the full flow test, the system shall be returned to service in

accordance with the manufacturer's instructions.

13.4.3.2.10 Grease or other sealing materials shall not be applied to the seating surfaces of preaction or deluge valves.

13.4.3.2.11* Records indicating the date the preaction or deluge valve was last tripped and the tripping time, as well as the individual and organization conducting the test, shall be maintained at a location or in a manner readily available for review by the authority having jurisdiction.

13.4.3.2.12 Low air pressure alarms, if provided, shall be tested quarterly in accordance with the manufacturer's instructions.

13.4.3.2.13 Low temperature alarms, if installed in valve enclosures, shall be tested annually at the beginning of the heating season.

13.4.3.2.14 Automatic air pressure maintenance devices, if provided, shall be tested yearly at the time of the annual preaction or deluge valve trip test, in accordance with the manufacturer's instructions.

13.4.3.3 Maintenance.

13.4.3.3.1 Leaks causing drops in supervisory pressure sufficient to sound warning alarms, and electrical malfunctions causing alarms to sound, shall be located and repaired.

13.4.3.3.2 During the annual trip test, the interior of the preaction or deluge valve shall be cleaned thoroughly and the parts replaced or repaired as necessary.

13.4.3.3.2.1 Interior cleaning and parts replacement or repair shall be permitted every 5 years for valves that can be reset without removal of a faceplate.

13.4.3.3.3* Auxiliary drains in preaction or deluge systems shall be operated after each system operation and before the onset of freezing conditions.

13.4.3.3.4 Additional maintenance as required by the manufacturer's instructions shall be provided.

13.4.4 Dry Pipe Valves/Quick-Opening Devices.

13.4.4.1 Inspection.

13.4.4.1.1 Valve enclosure heating equipment shall be inspected daily during cold weather for its ability to maintain a minimum temperature of at least 40°F (4°C).

13.4.4.1.1.1 Valve enclosures equipped with low temperature alarms shall be inspected weekly.

13.4.4.1.1.2 Low temperature alarms, if installed in valve enclosures, shall be inspected annually at the beginning of the heating season.

13.4.4.1.2 Gauges shall be inspected weekly.

13.4.4.1.2.1 The gauge on the supply side of the dry pipe valve shall indicate that the normal supply water pressure is being maintained.

13.4.4.1.2.2 The gauge on the system side of the dry pipe valve shall indicate that the proper ratio of air or nitrogen pressure to water supply pressure is being maintained in accordance with the manufacturer's instructions.

13.4.4.1.2.3* The gauge on the quick-opening device, if provided, shall indicate the same pressure as the gauge on the system side of the dry pipe valve.

13.4.4.1.3 Systems with auxiliary drains shall require a sign at the dry or preaction valve indicating the number of auxiliary drains and location of each individual drain.

13.4.4.1.4 The dry pipe valve shall be externally inspected monthly to verify the following:

- (1) The valve is free of physical damage.
- (2) All trim valves are in the appropriate open or closed position.
- (3) The intermediate chamber is not leaking.

13.4.4.1.5 The interior of the dry pipe valve shall be inspected annually when the trip test is conducted.

13.4.4.1.6 Strainers, filters, and restricted orifices shall be inspected internally every 5 years unless tests indicate a greater frequency is necessary.

13.4.4.2 Testing.

13.4.4.2.1* The priming water level shall be tested quarterly.

13.4.4.2.2* Each dry pipe valve shall be trip tested annually during warm weather.

13.4.4.2.2.1 Dry pipe valves protecting freezers shall be trip tested in a manner that does not introduce moisture into the piping in the freezers.

13.4.4.2.2.2* Every 3 years and whenever the system is altered, the dry pipe valve shall be trip tested with the control valve fully open and the quick-opening device, if provided, in service.

13.4.4.2.2.3* During those years when full flow testing in accordance with 13.4.4.2.2.2 is not required, each dry pipe valve shall be trip tested with the control valve partially open.

13.4.4.2.3 Grease or other sealing materials shall not be applied to the seating surfaces of dry pipe valves.

13.4.4.2.4* Quick-opening devices, if provided, shall be tested quarterly.

13.4.4.2.5 A tag or card that shows the date on which the dry pipe valve was last tripped, and the name of the person and organization conducting the test, shall be attached to the valve.

13.4.4.2.5.1 Separate records of initial air and water pressure, tripping air pressure, and dry pipe valve operating conditions shall be maintained on the premises for comparison with previous test results.

13.4.4.2.5.2 Records of tripping time shall be maintained for full flow trip tests.

13.4.4.2.6 Low air pressure alarms, if provided, shall be tested quarterly in accordance with the manufacturer's instructions.

13.4.4.2.7 Low temperature alarms, if installed in valve enclosures, shall be tested annually at the beginning of the heating season.

13.4.4.2.8 Automatic air pressure maintenance devices, if provided, shall be tested annually during the dry pipe valve trip test in accordance with the manufacturer's instructions.

13.4.4.2.9 Dry pipe systems shall be tested once every three years for air leakage, using one of the following test methods:

- (1) A pressure test at 40 psi for two hours. The system shall be permitted to lose up to 3 psi (0.2 bar) during the duration of the test. Air leaks shall be addressed if the system loses more than 3 psi (0.2 bar) during this test.
- (2) With the system at normal system pressure, shut off the air source (compressor or shop air) for 4 hours. If the low air pressure alarm goes off within this period, the air leaks shall be addressed.

13.4.4.3 Maintenance.

13.4.4.3.1 During the annual trip test, the interior of the dry pipe valve shall be cleaned thoroughly, and parts replaced or repaired as necessary.

13.4.4.3.2* Auxiliary drains in dry pipe sprinkler systems shall be drained after each operation of the system, before the onset of freezing weather conditions, and thereafter as needed.

13.5 Pressure Reducing Valves and Relief Valves.

13.5.1 Inspection and Testing of Sprinkler Pressure Reducing Valves. Sprinkler pressure reducing valves shall be inspected and tested as described in 13.5.1.1 and 13.5.1.2.

13.5.1.1 All valves shall be inspected quarterly to verify that the valves are in the following condition:

- (1) In the open position
- (2) Not leaking
- (3) Maintaining downstream pressures in accordance with the design criteria
- (4) In good condition, with handwheels installed and unbroken

13.5.1.2* A full flow test shall be conducted on each valve at 5-year intervals and shall be compared to previous test results.

13.5.1.2.1 Adjustments shall be made in accordance with the manufacturer's instructions.

13.5.1.3 A partial flow test adequate to move the valve from its seat shall be conducted annually.

13.5.2 Hose Connection Pressure Reducing Valves.

13.5.2.1 All valves shall be inspected annually to verify the following:

- (1) The handwheel is not broken or missing.
- (2) The outlet hose threads are not damaged.
- (3) No leaks are present.
- (4) The reducer and the cap are not missing.

13.5.2.2* A full flow test shall be conducted on each valve at 5-year intervals and shall be compared to previous test results.

13.5.2.2.1 Adjustments shall be made in accordance with the manufacturer's instructions.

13.5.2.3 A partial flow test adequate to move the valve from its seat shall be conducted annually.

13.5.3 Hose Rack Assembly Pressure Reducing Valves.

13.5.3.1 All valves shall be inspected annually to verify the following:

- (1) The handwheel is not missing or broken.
- (2) No leaks are present.

13.5.3.2 A full flow test shall be conducted on each valve at 5-year intervals and compared to previous test results.

13.5.3.2.1 Adjustments shall be made in accordance with the manufacturer's instructions.

13.5.3.3 A partial flow test adequate to move the valve from its seat shall be conducted annually.

13.5.4 Master Pressure Reducing Valves.

13.5.4.1* Valves shall be inspected weekly to verify that the valves are in the following condition:

- (1)* The downstream pressures are maintained in accordance with the design criteria.
- (2) The supply pressure is in accordance with the design criteria.
- (3) The valves are not leaking.
- (4) The valve and trim are in good condition.

13.5.4.2* A partial flow test adequate to move the valve from its seat shall be conducted quarterly.

13.5.4.3* A full flow test shall be conducted on each valve annually and shall be compared to previous test results.

13.5.4.4 When valve adjustments are necessary, they shall be made in accordance with the manufacturer's instructions.

13.5.5 Pressure Reducing Valves.

13.5.5.1 All pressure reducing valves installed on fire protection systems not covered by 13.5.1, 13.5.2, 13.5.3, or 13.5.4 shall be inspected in accordance with 13.5.1.1.

13.5.5.2 All pressure reducing valves installed on fire protection systems not covered by 13.5.1, 13.5.2, 13.5.3, or 13.5.4 shall be tested in accordance with 13.5.1.2.

13.5.6 Hose Valves.

13.5.6.1 Inspection.

13.5.6.1.1 Hose valves shall be inspected quarterly.

13.5.6.1.2 Hose valves shall be inspected to ensure that hose caps are in place and not damaged.

13.5.6.1.3 Hose threads shall be inspected for damage.

13.5.6.1.4 Valve handles shall be present and not damaged.

13.5.6.1.5 Gaskets shall be inspected for damage or deterioration.

13.5.6.1.6 Hose valves shall be inspected for leaks.

13.5.6.1.7 Hose valves shall be inspected to ensure no obstructions are present.

13.5.6.1.8 Hose valves shall be inspected to ensure that restricting devices are present.

13.5.6.2 Testing.

13.5.6.2.1* Class I and Class III standpipe system hose valves shall be tested annually by opening and closing the valves.

13.5.6.2.1.1 Hose valves that are difficult to operate or leak shall be repaired or replaced.

13.5.6.2.2* Hose valves on hose stations attached to sprinkler systems and Class II standpipe systems shall be tested every 3 years by opening and closing the valves.

13.5.6.2.2.1 Hose valves that are difficult to operate or that leak shall be repaired or replaced.

13.5.6.3 Maintenance. Hose valves that do not operate smoothly or open fully shall be lubricated, repaired, or replaced.

13.5.7 Fire Pump Pressure Relief Valves.

13.5.7.1 All circulation relief valves shall be inspected weekly.

13.5.7.1.1 The inspection shall verify that water flows through the valve when the fire pump is operating at shutoff pressure (i.e., churn), to prevent the pump from overheating.

13.5.7.1.2 During the annual fire pump test, the closure of the circulation relief valve shall be verified to be in accordance with the manufacturer's specifications.

13.5.7.2 All pressure relief valves shall be inspected weekly.

13.5.7.2.1 The inspection shall verify that the pressure downstream of the relief valve fittings in the fire pump discharge piping does not exceed the pressure for which the system components are rated.

13.5.7.2.2 During the annual fire pump flow test, the pressure relief valve shall be verified to be correctly adjusted and set to relieve at the correct pressure and to close below that pressure setting.

13.5.8 Maintenance. All damaged or missing components noted during the inspections specified in 13.5.6.1 through 13.5.6.2.2 shall be repaired or replaced in accordance with the manufacturer's instructions.

13.6 Backflow Prevention Assemblies.

13.6.1 Inspection. Inspection of backflow prevention assemblies shall be as described in 13.6.1.1 through 13.6.1.2.2.

13.6.1.1 The double check assembly (DCA) valves and double check detector assembly (DCDA) valves shall be inspected weekly to ensure that the OS&Y isolation valves are in the normal open position.

13.6.1.1.1 Valves secured with locks or electrically supervised in accordance with applicable NFPA standards shall be inspected monthly.

13.6.1.2* Reduced pressure assemblies (RPA) and reduced pressure detector assemblies (RPDA) shall be inspected weekly to ensure that the differential-sensing valve relief port is not continuously discharging and the OS&Y isolation valves are in the normal open position.

13.6.1.2.1 Valves secured with locks or electrically supervised in accordance with applicable NFPA standards shall be inspected monthly.

13.6.1.2.2 After any testing or repair, an inspection by the property owner shall be made to ensure that the system is in service and all isolation valves are in the normal open position and properly locked or electrically supervised.

13.6.2 Testing.

13.6.2.1* All backflow preventers installed in fire protection system piping shall be tested annually in accordance with the following:

- (1) A forward flow test shall be conducted at the designed flow rate, including hose stream demand, of the system, where hydrants or inside hose stations are located downstream of the backflow preventer.
- (2) A backflow performance test, as required by the authority having jurisdiction, shall be conducted at the completion of the forward flow test.

13.6.2.1.1 For backflow preventers sized 2 in. (50 mm) and under, the forward flow test shall be acceptable to conduct without measuring flow, where the test outlet is of a size to flow the system demand.

13.6.2.1.2 Where water rationing is enforced during shortages lasting more than 1 year, an internal inspection of the backflow preventer to ensure the check valves will fully open shall be acceptable in lieu of conducting the annual forward flow test.

13.6.2.1.3 Where connections do not permit a full flow test, tests shall be completed at the maximum flow rate possible.

13.6.2.1.4 The forward flow test shall not be required where annual fire pump testing causes the system demand to flow through the backflow preventer device.

13.6.2.2 Where connections do not permit a full flow test, tests shall be conducted at the maximum flow rate possible.

13.6.3 Maintenance.

13.6.3.1 Maintenance of all backflow prevention assemblies shall be conducted by a trained individual following the manufacturer's instructions in accordance with the procedure and policies of the authority having jurisdiction.

13.6.3.2 Rubber parts shall be replaced in accordance with the frequency required by the authority having jurisdiction and the manufacturer's instructions.

13.7 Fire Department Connections.

13.7.1 Fire department connections shall be inspected quarterly. The inspection shall verify the following:

- (1) The fire department connections are visible and accessible.
- (2) Couplings or swivels are not damaged and rotate smoothly.
- (3) Plugs or caps are in place and undamaged.
- (4) Gaskets are in place and in good condition.
- (5) Identification signs are in place.
- (6) The check valve is not leaking.
- (7) The automatic drain valve is in place and operating properly.
- (8) The fire department connection clapper(s) is in place and operating properly.

13.7.2 If fire department connection plugs or caps are not in place, the interior of the connection shall be inspected for obstructions, and it shall be verified that the fire department connection clapper is operational over its full range.

13.7.3 Components shall be repaired or replaced as necessary in accordance with the manufacturer's instructions. Any obstructions that are present shall be removed.

NEXT CHAPTER

12.6.2.1.4 The forward flow test shall not be required where annual fire pump testing causes the system demand to flow through the backflow preventer device.

12.6.2.2* All backflow devices installed in fire protection water supply shall be tested annually at the designed flow rate of the fire protection system, including required hose stream demands.

12.6.2.2.1 Where connections do not permit a full flow test, tests shall be conducted at the maximum flow rate possible.

12.6.3 Maintenance.

12.6.3.1 Maintenance of all backflow prevention assemblies shall be conducted by a trained individual following the manufacturer's instructions in accordance with the procedure and policies of the authority having jurisdiction.

12.6.3.2 Rubber parts shall be replaced in accordance with the frequency required by the authority having jurisdiction and the manufacturer's instructions.

12.7 Fire Department Connections.

12.7.1 Fire department connections shall be inspected quarterly. The inspection shall verify the following:

- (1) The fire department connections are visible and accessible.
- (2) Couplings or swivels are not damaged and rotate smoothly.
- (3) Plugs or caps are in place and undamaged.
- (4) Gaskets are in place and in good condition.
- (5) Identification signs are in place.
- (6) The check valve is not leaking.
- (7) The automatic drain valve is in place and operating properly.
- (8) The fire department connection clapper(s) is in place and operating properly.

12.7.2 If fire department connection plugs or caps are not in place, the interior of the connection shall be inspected for obstructions, and it shall be verified that the fire department connection clapper is operational over its full range.

12.7.3 Components shall be repaired or replaced as necessary in accordance with the manufacturer's instructions. Any obstructions that are present shall be removed.

Starts here

Chapter 13 Obstruction Investigation

13.1 General. This chapter shall provide the minimum requirements for conducting investigations of fire protection system piping for possible sources of materials that can cause pipe blockage.

13.2* Obstruction Investigation and Prevention.

13.2.1 An investigation of piping and branch line conditions shall be conducted every 5 years by opening a flushing connection at the end of one main and by removing a sprinkler toward the end of one branch line for the purpose of investigating for the presence of foreign organic and inorganic material.

13.2.1.1 Alternative nondestructive examination methods shall be permitted.

13.2.1.2 Tubercules or slime, if found, shall be tested for indications of microbiologically influenced corrosion (MIC).

13.2.2* An obstruction investigation shall be conducted for system or yard main piping wherever any of the following conditions exist:

- (1) Defective intake for fire pumps taking suction from open bodies of water
- (2) The discharge of obstructive material during routine water tests
- (3) Foreign materials in fire pumps, in dry pipe valves, or in check valves
- (4) Foreign material in water during drain tests or plugging of inspector's test connection(s)
- (5) Plugged sprinklers
- (6) Plugged piping in sprinkler systems dismantled during building alterations
- (7) Failure to flush yard piping or surrounding public mains following new installations or repairs
- (8) A record of broken public mains in the vicinity
- (9) Abnormally frequent false tripping of a dry pipe valve(s)
- (10) A system that is returned to service after an extended shutdown (greater than 1 year)
- (11) There is reason to believe that the sprinkler system contains sodium silicate or highly corrosive fluxes in copper systems
- (12) A system has been supplied with raw water via the fire department connection
- (13) Pinhole leaks
- (14) A 50-percent increase in the time it takes water to travel to the inspector's test connection from the time the valve trips during a full flow trip test of a dry pipe sprinkler system when compared to the original system acceptance test

13.2.3* Systems shall be examined for internal obstructions where conditions exist that could cause obstructed piping.

13.2.3.1 If the condition has not been corrected or the condition is one that could result in obstruction of the piping despite any previous flushing procedures that have been performed, the system shall be examined for internal obstructions every 5 years.

13.2.3.2 Internal inspections shall be accomplished by examining the interior of the following four points:

- (1) System valve
- (2) Riser
- (3) Cross main
- (4) Branch line

13.2.3.3 Alternative nondestructive examination methods shall be permitted.

13.2.4* If an obstruction investigation carried out in accordance with 13.2.1 indicates the presence of sufficient material to obstruct sprinklers, a complete flushing program shall be conducted by qualified personnel.

13.3 Prevention of Ice Obstruction. Dry pipe or preaction sprinkler system piping that protects or passes through freezers or cold storage rooms shall be inspected internally on an annual basis for ice obstructions at the point where the piping enters the refrigerated area.

13.3.1 Alternative nondestructive examinations shall be permitted.

13.3.2 All penetrations into the cold storage areas shall be inspected and, if an ice obstruction is found, additional pipe shall be examined to ensure no ice blockage exists.

Ends here

Chapter 14 Impairments

14.1 General. This chapter shall provide the minimum requirements for a water-based fire protection system impairment program. Measures shall be taken during the impairment to ensure that increased risks are minimized and the duration of the impairment is limited.

14.2 Impairment Coordinator.

14.2.1 The building owner shall assign an impairment coordinator to comply with the requirements of this chapter.

14.2.2 In the absence of a specific designee, the owner shall be considered the impairment coordinator.

14.2.3 Where the lease, written use agreement, or management contract specifically grants the authority for inspection, testing, and maintenance of the fire protection system(s) to the tenant, management firm, or managing individual, the tenant, management firm, or managing individual shall assign a person as impairment coordinator.

14.3 Tag Impairment System.

14.3.1* A tag shall be used to indicate that a system, or part thereof, has been removed from service.

14.3.2* The tag shall be posted at each fire department connection and system control valve indicating which system, or part thereof, has been removed from service.

14.3.3 The authority having jurisdiction shall specify where the tag is to be placed.

14.4 Impaired Equipment.

14.4.1 The impaired equipment shall be considered to be the water-based fire protection system, or part thereof, that is removed from service.

14.4.2 The impaired equipment shall include, but shall not be limited to, the following:

- (1) Sprinkler systems
- (2) Standpipe systems
- (3) Fire hose systems
- (4) Underground fire service mains
- (5) Fire pumps
- (6) Water storage tanks
- (7) Water spray fixed systems
- (8) Foam-water systems
- (9) Fire service control valves

14.5* Preplanned Impairment Programs.

14.5.1 All preplanned impairments shall be authorized by the impairment coordinator.

14.5.2 Before authorization is given, the impairment coordinator shall be responsible for verifying that the following procedures have been implemented:

- (1) The extent and expected duration of the impairment have been determined.
- (2) The areas or buildings involved have been inspected and the increased risks determined.

(3) Recommendations have been submitted to management or building owner/manager. Where a required fire protection system is out of service for more than 4 hours in a 24-hour period, the impairment coordinator shall arrange for one of the following:

- (a) Evacuation of the building or portion of the building affected by the system out of service
- (b)*An approved fire watch
- (c)*Establishment of a temporary water supply
- (d)*Establishment and implementation of an approved program to eliminate potential ignition sources and limit the amount of fuel available to the fire
- (4) The fire department has been notified.
- (5) The insurance carrier, the alarm company, building owner/manager, and other authorities having jurisdiction have been notified.
- (6) The supervisors in the areas to be affected have been notified.
- (7) A tag impairment system has been implemented. (See Section 14.3.)
- (8) All necessary tools and materials have been assembled on the impairment site.

14.6 Emergency Impairments.

14.6.1 Emergency impairments include but are not limited to system leakage, interruption of water supply, frozen or ruptured piping, and equipment failure.

14.6.2 When emergency impairments occur, emergency action shall be taken to minimize potential injury and damage.

14.6.3 The coordinator shall implement the steps outlined in Section 14.5.

14.7 Restoring Systems to Service. When all impaired equipment is restored to normal working order, the impairment coordinator shall verify that the following procedures have been implemented:

- (1) Any necessary inspections and tests have been conducted to verify that affected systems are operational. The appropriate chapter of this standard shall be consulted for guidance on the type of inspection and test required.
- (2) Supervisors have been advised that protection is restored.
- (3) The fire department has been advised that protection is restored.
- (4) The building owner/manager, insurance carrier, alarm company, and other authorities having jurisdiction have been advised that protection is restored.
- (5) The impairment tag has been removed.

Annex A Explanatory Material

Annex A is not a part of the requirements of this NFPA document but is included for informational purposes only. This annex contains explanatory material, numbered to correspond with the applicable text paragraphs.

A.1.2 History has shown that the performance reliability of a water-based fire protection system under fire-related conditions increases where comprehensive inspection, testing, and maintenance procedures are enforced. Diligence during an inspection is important. The inspection, testing, and maintenance of some items in the standard might not be practical or possible, depending on existing conditions. The inspector should use good judgment when making inspections.



**SERVICE
BENEFITS:**

- Keep your system in shape to help safeguard people, property and assets
- Support code compliance efforts – NFPA 25 requires an obstruction inspection every five years
- Help identify obstructions and/or corrosion of piping that could compromise your system
- Achieve financial return – the costs of replacing sprinkler pipes can be high
- Get inspections from experienced sprinkler professionals



The inside of your sprinkler system piping could be obstructed

5-YEAR OBSTRUCTION INSPECTION SERVICE

Help protect life and property with code-required inspection of your automatic sprinkler system

Obstruction Inspection Specified in NFPA 25

Like your car, an automatic fire sprinkler system has components that can age or wear out over time. Piping, valves and other devices can become obstructed by foreign materials or corrode to the point where they might leak or fail under pressure. And that can put lives and property at risk.

In 2002, the National Fire Protection Association (NFPA) strengthened the inspection code requirement for automatic fire sprinkler systems. In a move that is helping to drive proper maintenance of these critical life-safety systems, NFPA adopted a code requiring that an internal inspection of piping be conducted every five years or when conditions indicate the need for an internal inspection. This type of inspection can identify microbiologically influenced corrosion (MIC), rust and slime that may obstruct the piping and compromise the system.

NFPA 25. Inspection Code Requirement for Automated Fire Sprinkler Systems

13.2.1 (2006 edition) An investigation of piping and branch line conditions shall be conducted every five years by opening a flushing connection at the end of one main and by removing a sprinkler toward the end of one branch line for the purpose of investigating for the presence of foreign organic and inorganic material.

Our obstruction inspection

SimplexGrinnell® offers a five-year obstruction inspection for automatic fire sprinkler systems that can help keep your system ready and in good working order. Should a SimplexGrinnell inspection identify any obstructions or corrosion, we can take samples and have them tested by an independent lab. At the conclusion of that process, we can make recommendations for appropriate corrective actions.

Knowledgeable, experienced sprinkler professionals

Our sprinkler professionals receive formal training regarding the inspection of fire sprinkler systems. Plus, they are experienced in various types of water-based fire sprinklers, including wet, dry, pre-action, in-rack and ESFR (early suppression fast response) systems. With this combination of training and experience, they can inspect components and pipes, confirm system readiness, and provide a written report of the findings. The detailed SimplexGrinnell reports provide a valuable historical record of inspections that can be used for insurance purposes and liability claims.

Advanced inspection technology

SimplexGrinnell can arrange for a five-year sprinkler system obstruction inspection. The inspection can be performed visually, as outlined

in NFPA 25, or through an independent supplier using scopes, water chemical analysis and water/deposit sampling. Specifically, the inspection tests can include:

- Corrosion studies – Determines losses in the wall thickness of your pipes that can be caused by various corrosive events precipitated by internal interactions involving oxygen, water and steel
- Microbiologically Influenced Corrosion – Identifies the biological microbes that actively or passively attack metal in a sprinkler system
- Obstruction identification – Determines if foreign materials such as rust, slime or MIC are obstructing piping, valves or other devices

Potential insurance savings

Can five-year inspections have a positive effect on insurance rates? Buildings completely outfitted with an automatic sprinkler system often benefit from reduced rates. We recommend that you check with your insurance company to see what impact a five-year inspection might have on rates.

Insurance costs aside, there are a number of compelling reasons to make compliance with the NFPA 25 five-year obstruction inspection requirement a priority. The costs are very reasonable, whether for an internal obstruction inspection or, in the event deposits are found, for follow-up water/sample deposit testing. Perhaps above all else, the five-year inspection can strengthen your system's ability to do its job – help protect life and property.

Why not consider more comprehensive maintenance?

Our five-year obstruction inspection can meet a specific need of building owners and facility managers focused on compliance with the NFPA

25 requirement. Customers who want more regular system inspections – and a more comprehensive overall program – can select SimplexGrinnell's broad-ranging coverage that includes maintenance services. In addition to covering the five-year obstruction inspection, this plan encompasses annual inspections and 24/7 emergency service. With this coverage, you can make one convenient annual payment while avoiding unbudgeted costs and overtime charges for after-hours repairs. You can also add a Central Station Monitoring agreement with SimplexGrinnell. Put all these benefits together, and you've got a truly cost-effective program that works especially well for large manufacturing plants, retail complexes, healthcare institutions and government facilities. What's more, this coverage comes with the overall SimplexGrinnell commitment to high-quality, timely service.

Shaping the future of life safety today

As a longtime leader in the life-safety industry, SimplexGrinnell serves two million customers with best-in-class fire alarm, sprinkler, suppression, security and communications systems and services. With our total solutions capabilities, SimplexGrinnell stands out as a single-source provider that can maintain and service all your life-safety systems. And our solutions are delivered through 150 local, company-owned offices.

We're here to help

For more information about how we can support your business through state-of-the-art life safety, **call us at 1-800-746-7539.**

Or visit www.simplexgrinnell.com.



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Chapter 13 Valves, Valve Components, and Trim

13.1* General.

This chapter shall provide the minimum requirements for the routine inspection, testing, and maintenance of valves, valve components, and trim. Table 13.1 shall be used to determine the minimum required frequencies for inspection, testing, and maintenance.

Table 13.1 Summary of Valves, Valve Components, and Trim Inspection, Testing, and Maintenance

Item	Frequency	Reference
Inspection		
<i>Control Valves</i>		
Sealed	Weekly	13.3.2.1
Locked	Monthly	13.3.2.1.1
Tamper switches	Monthly	13.3.2.1.1
<i>Alarm Valves</i>		
Exterior	Monthly	13.4.1.1
Interior	5 years	13.4.1.2
Strainers, filters, orifices	5 years	13.4.1.2
<i>Check Valves</i>		
Interior	5 years	13.4.2.1
<i>Preaction/Deluge Valves</i>		
Enclosure (during cold weather)	Daily/weekly	13.4.3.1
Exterior	Monthly	13.4.3.1.6
Interior	Annually/5 years	13.4.3.1.7
Strainers, filters, orifices	5 years	13.4.3.1.8
<i>Dry Pipe Valves/ Quick-Opening Devices</i>		
Enclosure (during cold weather)	Daily/weekly	13.4.4.1.1
Exterior	Monthly	13.4.4.1.4
Interior	Annually	13.4.4.1.5
Strainers, filters, orifices	5 years	13.4.4.1.6
<i>Pressure Reducing and Relief Valves</i>		
Sprinkler systems	Annually	13.5.1.1

Hose connections	Annually	13.5.2.1
Hose racks	Annually	13.5.3.1
Fire pumps		
Casing relief valves	Weekly	13.5.6.1, 13.5.6.1.1
Pressure relief valves	Weekly	13.5.6.2, 13.5.6.2.1
Backflow Prevention Assemblies		
Reduced pressure	Weekly/monthly	13.6.1
Reduced pressure detectors	Weekly/monthly	13.6.1
Fire Department Connections	Quarterly	13.7.1
Test		
Main Drains	Annually/quarterly	13.2.6, 13.2.6.1, 13.3.3.4
Waterflow Alarms	Quarterly/semiannually	13.2.6
Control Valves		
Position	Annually	13.3.3.1
Operation	Annually	13.3.3.1
Supervisory	Semiannually	13.3.3.5
Preaction/Deluge Valves		
Priming water	Quarterly	13.4.3.2.1
Low air pressure alarms	Quarterly	13.4.3.2.10
Full flow	Annually	13.4.3.2.2
Dry Pipe Valves/ Quick-Opening Devices		
Priming water	Quarterly	13.4.4.2.1
Low air pressure alarm	Quarterly	13.4.4.2.6
Quick-opening devices	Quarterly	13.4.4.2.4
Trip test	Annually	13.4.4.2.2
Full flow trip test	3 years	13.4.4.2.2.2
Pressure Reducing and Relief Valves		
Sprinkler systems	5 years	13.5.1.2
Circulation relief	Annually	13.5.6.1.2
Pressure relief valves	Annually	13.5.6.2.2
Hose connections	5 years	13.5.2.2
Hose racks	5 years	13.5.3.2
Backflow Prevention Assemblies	Annually	13.6.2

Chapter 14 Obstruction Investigation

14.1 General.

This chapter shall provide the minimum requirements for conducting investigations of fire protection system piping for possible sources of materials that could cause pipe blockage.

14.2* Obstruction Investigation and Prevention.

14.2.1 An inspection of piping and branch line conditions shall be conducted every 5 years by opening a flushing connection at the end of one main and by removing a sprinkler toward the end of one branch line for the purpose of inspecting for the presence of foreign organic and inorganic material.

14.2.1.1 Alternative nondestructive examination methods shall be permitted.

14.2.1.2 Tubercules or slime, if found, shall be tested for indications of microbiologically influenced corrosion (MIC).

14.2.2* An obstruction investigation shall be conducted for system or yard main piping wherever any of the following conditions exist:

- (1) Defective intake for fire pumps taking suction from open bodies of water
- (2) The discharge of obstructive material during routine water tests
- (3) Foreign materials in fire pumps, in dry pipe valves, or in check valves
- (4) Foreign material in water during drain tests or plugging of inspector's test connection(s)
- (5) Plugged sprinklers
- (6) Plugged piping in sprinkler systems dismantled during building alterations
- (7) Failure to flush yard piping or surrounding public mains following new installations or repairs
- (8) A record of broken public mains in the vicinity
- (9) Abnormally frequent false tripping of a dry pipe valve(s)
- (10) A system that is returned to service after an extended shutdown (greater than 1 year)
- (11) There is reason to believe that the sprinkler system contains sodium silicate or highly corrosive fluxes in copper systems
- (12) A system has been supplied with raw water via the fire department connection
- (13) Pinhole leaks
- (14) A 50 percent increase in the time it takes water to travel to the inspector's test connection from the time the valve trips during a full flow trip test of a dry pipe sprinkler system when compared to the original system acceptance test

14.2.3* Systems shall be examined for internal obstructions where conditions exist that could cause obstructed piping.

14.2.3.1 If the condition has not been corrected or the condition is one that could result in obstruction of the piping despite any previous flushing procedures that have been performed, the system shall be examined for internal obstructions every 5 years.

14.2.3.2 Internal inspections shall be accomplished by examining the interior of the following four points:

- (1) System valve
- (2) Riser
- (3) Cross main
- (4) Branch line

14.2.3.3 Alternative nondestructive examination methods shall be permitted.

14.2.4* If an obstruction investigation carried out in accordance with 14.2.1 indicates the presence of sufficient material to obstruct sprinklers, a complete flushing program shall be conducted by qualified personnel.

14.3 Ice Obstruction.

Dry pipe or preaction sprinkler system piping that protects or passes through freezers or cold storage rooms shall be inspected internally on an annual basis for ice obstructions at the point where the piping enters the refrigerated area.

14.3.1 Alternative nondestructive examinations shall be permitted.

14.3.2 All penetrations into the cold storage areas shall be inspected and, if an ice obstruction is found, additional pipe shall be examined to ensure no ice blockage exists.

NEXT CHAPTER

Chapter 15 Impairments

15.1 General.

This chapter shall provide the minimum requirements for a water-based fire protection system impairment program. Measures shall be taken during the impairment to ensure that increased risks are minimized and the duration of the impairment is limited.

15.2 Impairment Coordinator.

15.2.1 The property owner shall assign an impairment coordinator to comply with the requirements of this chapter.

15.2.2 In the absence of a specific designee, the property owner shall be considered the impairment coordinator.

15.2.3 Where the lease, written use agreement, or management contract specifically grants the authority for inspection, testing, and maintenance of the fire protection system(s) to the tenant, management firm, or managing individual, the tenant, management firm, or managing individual shall assign a person as impairment coordinator.

15.3 Tag Impairment System.

15.3.1* A tag shall be used to indicate that a system, or part thereof, has been removed from service.

15.3.2* The tag shall be posted at each fire department connection and system control valve, indicating which system, or part thereof, has been removed from service.

15.3.3 The authority having jurisdiction shall specify where the tag is to be placed.

15.4 Impaired Equipment.

15.4.1 The impaired equipment shall be considered to be the water-based fire protection system, or part thereof, that is removed from service.

15.4.2 The impaired equipment shall include, but shall not be limited to, the following:

- (1) Sprinkler systems
- (2) Standpipe systems
- (3) Fire hose systems
- (4) Underground fire service mains
- (5) Fire pumps
- (6) Water storage tanks
- (7) Water spray fixed systems
- (8) Foam-water systems
- (9) Fire service control valves

15.5* Preplanned Impairment Programs.

15.5.1 All preplanned impairments shall be authorized by the impairment coordinator.

15.5.2 Before authorization is given, the impairment coordinator shall be responsible for verifying that the following procedures have been implemented:

- (1) The extent and expected duration of the impairment have been determined.
- (2) The areas or buildings involved have been inspected and the increased risks determined.
- (3) Recommendations have been submitted to management or the property owner/manager. Where a required fire protection system is out of service for more than 10 hours in a 24-hour period,

the impairment coordinator shall arrange for one of the following:

- (a) Evacuation of the building or portion of the building affected by the system out of service
 - (b)* An approved fire watch
 - (c)* Establishment of a temporary water supply
 - (d)* Establishment and implementation of an approved program to eliminate potential ignition sources and limit the amount of fuel available to the fire
- (4) The fire department has been notified.
 - (5) The insurance carrier, the alarm company, property owner/manager, and other authorities having jurisdiction have been notified.
 - (6) The supervisors in the areas to be affected have been notified.
 - (7) A tag impairment system has been implemented. (*See Section 15.3.*)
 - (8) All necessary tools and materials have been assembled on the impairment site.

15.6 Emergency Impairments.

15.6.1 Emergency impairments include but are not limited to system leakage, interruption of water supply, frozen or ruptured piping, and equipment failure.

15.6.2 When emergency impairments occur, emergency action shall be taken to minimize potential injury and damage.

15.6.3 The coordinator shall implement the steps outlined in Section 15.5.

15.7 Restoring Systems to Service.

When all impaired equipment is restored to normal working order, the impairment coordinator shall verify that the following procedures have been implemented:

- (1) Any necessary inspections and tests have been conducted to verify that affected systems are operational. The appropriate chapter of this standard shall be consulted for guidance on the type of inspection and test required.
- (2) Supervisors have been advised that protection is restored.
- (3) The fire department has been advised that protection is restored.
- (4) The property owner/manager, insurance carrier, alarm company, and other authorities having jurisdiction have been advised that protection is restored.
- (5) The impairment tag has been removed.

NEXT CHAPTER

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RSS Feed](#)[Laws, Codes, &
Standards](#)[Licenses](#)[Permits](#)[Inspections](#)[Fire Sprinkler
Reports](#)[Obstruction
Investigations](#)[Sprinkler System
Shutdown Policy](#)[Design & Installation
Issues](#)[Residential Fire
Sprinkler Systems](#)[Types of Multipurpose
Home Systems](#)[Maine Fire Incident
Reporting System](#)[Maine Fire Protection
Services Commission](#)[Fire Service Rules & Laws](#)[Research & Reports](#)[Personnel Directory](#)[Home](#) > [Fire Sprinklers](#) > [Inspections](#) > [Obstruction Investigations](#)

Obstruction Investigations

NFPA 25, 2002 edition, section 13.2.1. is meant to be a minor internal pipe *inspection* done every 5 years, whereas section 13.2.2. is a thorough *investigation* only done when needed. Every 5 years an inspection is done according to section 13.2.1 by removing just 1 fire sprinkler head and 1 flushing connection and looking to see if there is any evidence of obstruction. If there is no evidence of obstruction, then an investigation is not required, and this minimal inspection does not have to be done for another 5 years.

Yes, it is true that NFPA 25 does not limit the obstruction investigation to dry systems, as seen in Table 5-1. In annex D3.2, however, it says that when there is both a dry and wet system, check the dry system first. If the dry system is ok, then don't bother to check the wet system, but if it isn't, then check the wet system too.

If there is evidence of obstruction, then a full obstruction investigation is to be done according to the rest of section 13.2. This is a big deal and tends to be very expensive, especially where flushing is involved. During any inspection, if any of the 14 conditions of section 13.2.2 are discovered, then the obstruction investigation is warranted at that time, with the quick-check inspection of section 13.2.1 done every 5 years from the time of correction onward. The obstruction investigation, depending upon what is discovered, may require flushing for a small part of the system, or for the entire system. Repairs and/or replacement may be required for a small part or a large part of the system depending upon what the obstruction investigation reveals.

In summary, here is the intent of the code, "See if its broken. If its broken, then figure out how badly it's broken and then fix it. If it's not broken, then don't fix it."

The 2008 edition of NFPA 25 clarifies this whole section. The 2008 edition is now out, and will be adopted later this year by our office. This 2008 edition makes clear the difference between "inspections" and "investigations" in their section 14.2.

[Posted 3-14-08, then updated 3-19-08 to include the second paragraph for clarification]

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FAQ - NFPA 25

We have been experiencing pin-hole leaks in our sprinkler system. Our maintenance contractor suggests that the problem may be the presence of MIC. What is MIC and how can the problem be corrected?

MIC or microbiologically influenced corrosion is the result of certain types of bacteria in the water that attack steel and copper pipe. MIC can be recognized by the presence of orange or black tubercles or black mud-like slime in steel pipe and blue or green tubercles in copper pipe.

The best approach to address this situation is to submit a sample of the corrosion by-product to a laboratory for testing (such labs can be found on the internet) and identification of the microorganism responsible. Once identified, a treatment strategy can be developed. This may involve altering one or more environmental conditions inside the pipe such as: oxygen levels, pH, temperature or residual chlorine content. If the problem is MIC, treatment of the water will be necessary each time you test or flush your system. Introducing a fresh supply of water and oxygen may allow the MIC to renew its attack on the pipe.